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ABSTRACT

An attempt is made to determine whether a procedure requiring each member of a rating group to rank a subset of fifteen goals selected at random from one hundred and six goals would produce results that were, in effect, equivalent to having each member of a rating group rate each of the one hundred and six goals. The ratings of the one hundred and six goals by fifty-three California elementary school principals obtained during a field testing were used to provide the standard against which the results of the subset ranking procedures was to be compared since the sampling of each group was largely incidental and no provision was made for equating or randomizing administrators between the two rating groups, differences observed might be influenced by extraneous variables. The subset ranking procedure (SRK) yields results that are equivalent to those obtained with complete rating or ranking procedures. However, it seems inappropriate at this time to either recommend or reject the use of the SRK or any other subset procedure as a substitute for complete rating/ranking procedures until the potential problem of rater dissatisfaction can be investigated. (Author/BB)

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UCLA Graduate School of Education
Los Angeles, California

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A COMPARISON OF PROCEDURES FOR DETERMINING GOAL PRIORITIES

Jack Krakower
and
Ralph Hoepfner

CSE Report No. 90
March 1974

CENTER FOR THE STUDY OF EVALUATION

MARVIN C. ALKIN
DIRECTOR

UCLA Graduate School of Education

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The Collective Viewpoints Approach to goal selection described in the CSE Elementary School Evaluation KIT: Needs Assessment (Hoepfner, et al., 1972) provides a means for systematically determining what various groups (such as principals, teachers, parents, and school boards) consider to be the relative priorities among the set of 106 elementary school goals described in the KIT (see Appendix). Basically, the Collective Viewpoints approach involves (1) having each member of the rating-group rate each of the 106 goals on a five-point scale of importance; and then (2) rank-ordering the goals according to their average ratings. An optional procedure for pinpointing the most important goals requires that the rating-group rank the top-priority goals identified in number (1), and then proceed with number (2) based on average rankings.

The purpose of the present study was to determine whether a procedure requiring each member of a rating-group to "rank" a subset of only 15 goals selected at random from the 106 included in the KIT would produce results that were, in effect, equivalent to having each member of a rating-group rate each of the 106 goals.

The equivalence of the results of the "subset-ranking procedure" and "complete-ranking procedure" would provide a basis for considering the less resource-demanding subset-ranking procedure (i.e., fewer demands in terms of rater time and effort, rater ability to discriminate goal priorities, tallying time, and number of required goal cards) as an alternate or substitute for a complete rating or ranking procedure.

METHOD

Ratings of the 106 goals by fifty-three California elementary school principals obtained during the field-testing of the Needs Assessment KIT (June - July 1970) provided the standard against which the results of the subset ranking procedure was to be compared. The standard ratings were obtained in the following manner:

> Each principal participating in the field-test was instructed to rate each of the 106 goals on a five-point scale:
>
> 1. Unimportant, Irrelevant
> 2. Marginal Importance
> 3. Average Importance
> 4. Moderate Importance
> 5. Most Important
>
> Two weeks later they were asked to rate each goal again and then to calculate their average rating for each goal. Each principal then rank-ordered all 106 averages. CSE calculated the principals' mean rating for each goal and the principals' mean ranking for each goal. The mean ratings and the mean rankings were then rank-ordered; the ratings supplying a "Complete Rating Procedure" (CRT) ranking, and the rankings supplying a "Complete Ranking Procedure" (CRK) ranking.

The results of the subset-ranking procedure were obtained in the following manner:

> Complete decks of 106 goal cards were randomly sorted into 15-card and 16-card subdecks (each 106 card deck yielded six 15-card subdecks and one 16-card subdeck). Between November 1970 and January 1971, 74 California school administrators (principals, superintendents, and assistant superintendents) attending workshops around the state were asked to rank-order the goals in the subdecks according to their importance. CSE then calculated a mean rank value for each goal and rank-ordered the values to yield "Subset Ranking Procedure" (SRK) results.

It should be made clear that while both groups of raters were California school administrators, the two might well differ in many important ways. Since the sampling of each group was largely incidental and no provision was made for equating or randomizing administrators between the two rating groups,

differences observed might well be influenced by all the extraneous variables that confound the worst of the quasi-experimental studies. With this kept in mind, the reader can interpret the following indexes of similarity of ratings as very low estimates of the similarity that would have been demonstrated if experimental sampling techniques had been rigorously adhered to.

RESULTS

The results of employing the SRK to determine goal priorities are reported in Table 1. The goals in the table have been arranged according to the means of their rank values.

Spearman Rank Correlation Coefficients (r_s) and Kendall Tau Correlation Coefficients (T) were calculated to obtain indexes of the extent to which the results obtained by employing the three procedures were related. All coefficients in Table 2 are significant at the .001 level. The null hypothesis that the observed values of r_s and T differ from zero only by chance and that the goal prioritizing procedures do <u>not</u> yield results that are related must be rejected.[1]

The extent of the relationship between the results of the different procedures can, perhaps, be more easily sensed from the scatterplots of the data in Figures 1A through 1C. Considering that approximately six months passed between the collection of the CRT and CRK data and the collection of the SRK data, and that the SRK data was not limited to the opinions of principals but also included the opinions of school superintendents and assistant superintendents, it is reasonable to interpret the obtained correlation coefficients as conservative estimates of the degree to which the results of the different procedures are actually related.

TABLE 1

Goal Priorities By The Subset Ranking Procedure (SRK), Mean Rank Values, and Number of Administrators Ranking Each Goal

RANK	GOAL	MEAN RANK VALUE	N
1	3B	1.385	13
2	4A	1.500	8
3	41B	1.867	15
4	1B	1.900	10
5	8A	2.500	6
6	32A	2.636	11
7	3A	3.167	12
8	32B	3.231	13
9	31A	3.250	8
10	2A	3.917	12
11	2C	4.125	8
12	9A	4.200	12
13	8B	4.222	9
14	13F	4.375	16
15	2B	4.500	10
16	37B	4.692	13
17	27A	4.737	19
18	29B	4.900	10
19	9B	4.933	15
20	40B	5.300	10
21	40A	5.333	9
22	23A	5.556	9
23	30A	5.600	10
24	8D	5.600	10
25	8C	5.700	10
26	27B	5.714	7
27	1C	5.800	5
28	19A	6.000	7
29	14A	6.200	10
30	10B	6.286	7
31	35G	6.462	13
32	31C	6.556	9
33	25A	6.556	9
34	36B	6.583	12
35	28A	6.667	12
36	13G	6.667	4
37	4B	6.667	9
38	17A	6.700	10
39	38B	6.714	14
40	30B	6.833	12
41	17B	6.917	12
42	41C	7.100	10
43	38A	7.143	14
44	14B	7.143	7
45	41A	7.364	11

Table 1 (continued)

46	23B	7.385	13
47	29A	7.500	8
48	15B	7.533	15
49	35A	7.538	13
50	15A	7.545	11
51	1A	7.636	11
52	39B	7.846	13
53	35D	8.111	9
54	24B	8.143	7
55	37A	8.250	12
56	39A	8.500	6
57	16B	8.571	7
58	13D	8.583	12
59	35B	8.583	12
60	15D	8.714	7
61	16A	8.800	10
62	30C	8.800	10
63	a3B	8.875	8
64	36A	8.929	14
65	24A	9.000	9
66	28B	9.000	10
67	35F	9.222	9
68	35C	9.300	10
69	35E	9.444	9
70	34	9.636	11
71	32C	9.667	15
72	20B	9.700	10
73	25B	9.778	9
74	6B	9.933	15
75	23C	10.000	17
76	6A	10.125	8
77	15C	10.200	10
78	13A	10.222	9
79	31B	10.300	10
80	5A	10.333	9
81	10C	10.400	8
82	16C	10.625	10
83	18A	11.000	14
84	5B	11.000	10
85	19B	11.091	11
86	13E	11.182	11
87	33	11.200	5
88	26A	11.286	7
89	18B	11.333	12
90	13C	11.500	10

Table 1 (continued)

91	7A	11.500	8
92	12A	11.556	9
93	7B	11.667	12
94	12B	11.700	10
95	22B	11.700	10
96	20A	12.250	8
97	26B	12.462	13
98	21B	12.500	16
99	21C	12.571	7
100	21A	12.750	12
101	10A	12.800	10
102	11B	12.929	14
103	22A	13.000	4
104	11C	13.308	13
105	11D	14.000	10
106	11A	14.400	10

	CRT	CRK	SRK
CRT	---	r_s = .991* T = .931*	r_s = .835* T = .657*
CRK		---	r_s = .816* T = .636*
SRK			---

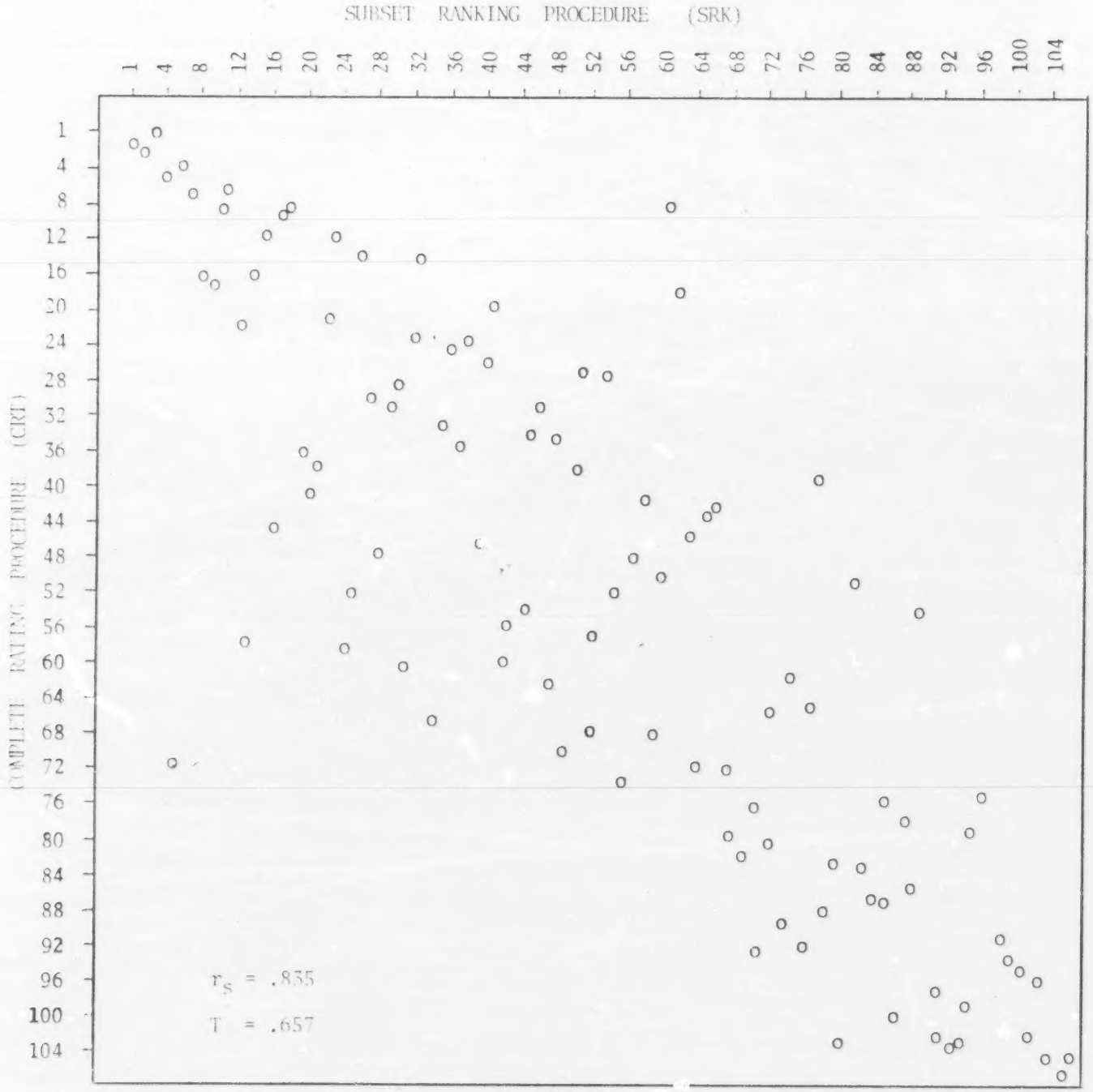
*p < .001

TABLE 2

Spearman Rank (r_s) and Kendall Tau (T) Intercorrelations for the degree of relationship between the results of the three goal prioritizing procedures.

Figure 1A

Scatterplot of results obtained by the Subset Ranking Procedure (SRK) with results obtained by the Complete Rating Procedure (CRT)*



*Each circle (o) represents a specific goal. E.g., goal 41B was ranked first by the CRT but third by the SRK.

Figure 1B

Scatterplot of results obtained by the Subset Ranking Procedure (SRK) with the results obtained by the Complete Rating-Ranking Procedure (CRT)

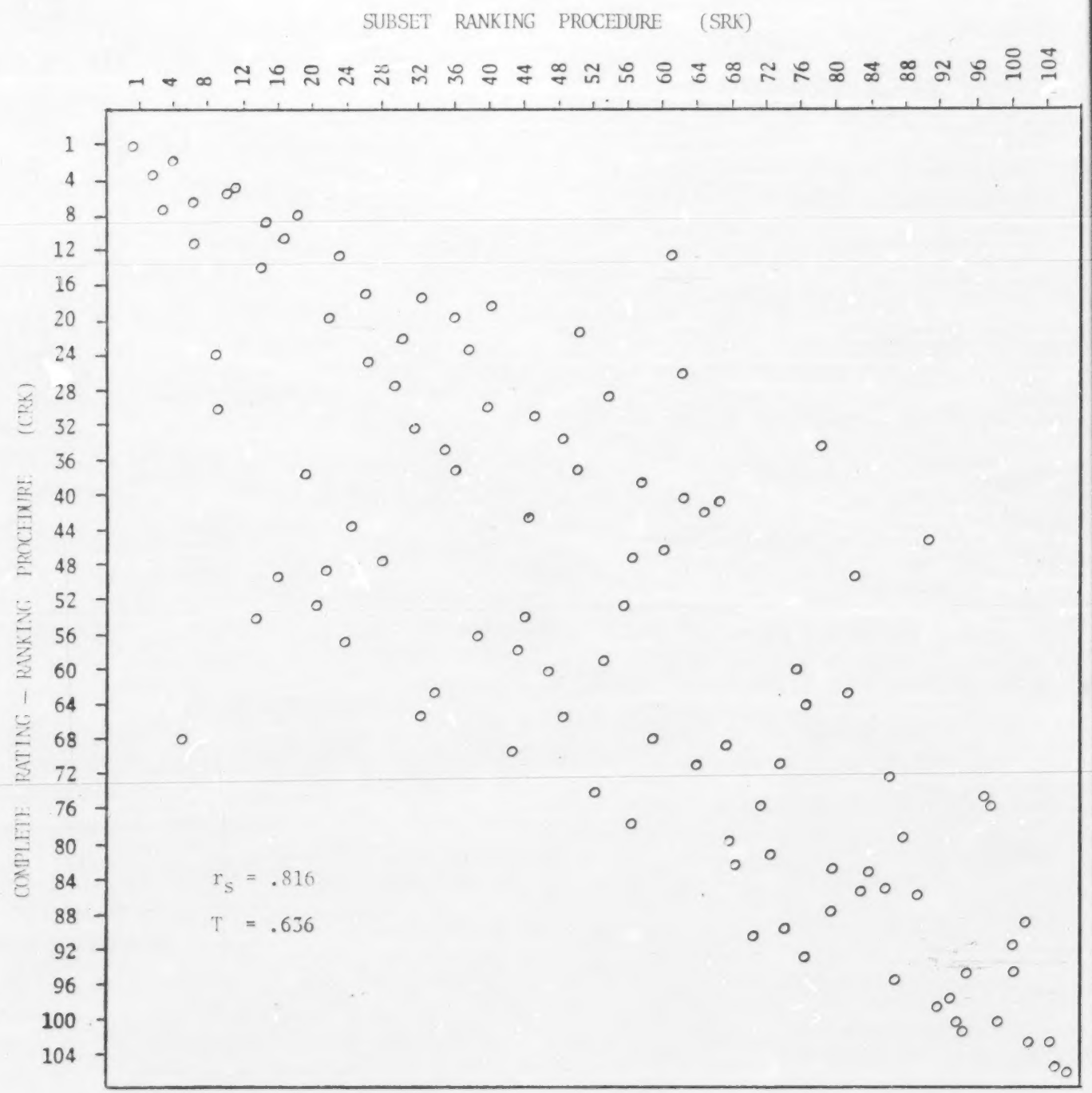
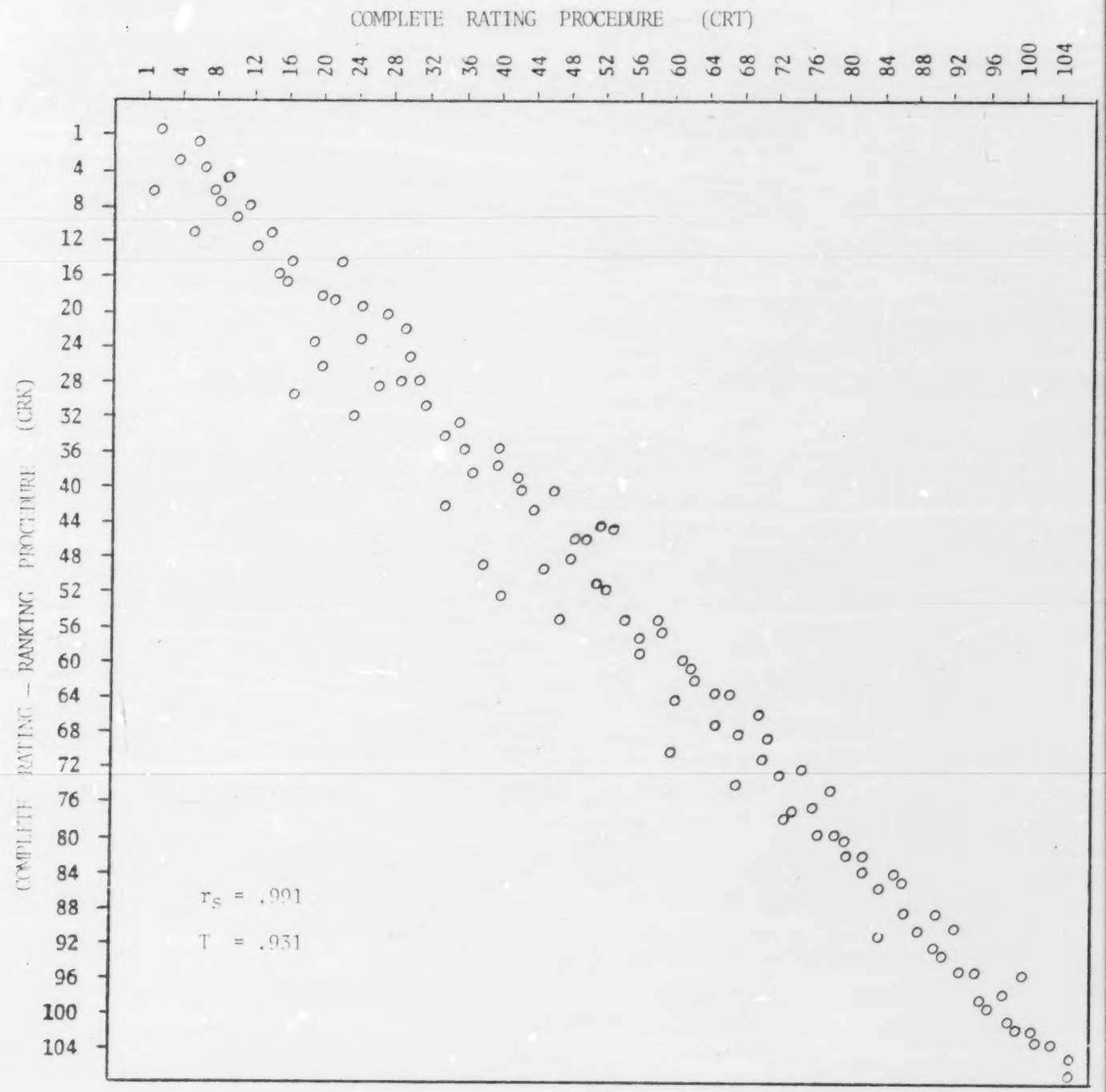


Figure 1C

Scatterplot of results obtained by the Complete Rating Procedure (CRT) with the results obtained by the Complete Rating-Ranking Procedure (CRK)



When school administrators choose to undertake a Needs Assessment, however, they are primarily concerned with identifying "high priority goals." For this reason, studies into the possibility of employing subset-type procedures as alternates or substitutes for "complete" procedures must carefully examine the degree to which subset-type procedures identify the same high priority goals.

Tables 3A through 3C present the eleven highest ranking goals identified by the SRK, CRT, and the CRK in the present study. The "connecting lines" identify goals that were placed in the top eleven ranks by both of the procedures compared. The connecting lines in Tables 3A and 3B indicate that the SRK was successful in identifying eight of the eleven top-ranked CRT and CRK goals. The crossed connecting lines, however, indicate that the eight goals were not ranked in the same order.

This difference in goal priorities (i.e., as reflected in crossed connecting lines) is not as damaging to the argument for using the SRK procedure as an alternate or substitute for "complete" procedures as one might at first believe. The crossed connecting lines in Table 3C[2] suggest that two different goal prioritizing procedures will simply yield different results--even if the same exact group of raters is involved in the test of this proportion.

The importance of differences in priorities in top-ranked goals is further mitigated by the "reliability" of our instruments. Even if the procedures under consideration (SRK, CRT, and the CRK) were (approximately) perfectly reliable, with the standard deviations of goal ratings/rankings being as large as they are, the Standard Error of Measurement[3] for almost every single goal would be such, that there would still be a 95% chance that a goal's true rank could actually lie within ± 2 ranks from its obtained rank[4]. If the

Table 3A

Top Eleven Ranked Goals by the CRT and the SRK Procedures

COMPLETE RATING PROCEDURE (CRT)					SUBSET RANKING PROCEDURE (SRK)				
N	SD	D*	$\bar{X}$	GOAL	GOAL	$\bar{X}$	D*	SD	N
53	.32	.02 =(	4.85	41B	3B	1.385	)= .115	.625	13
53	.40	.17 =(	4.83	3B	4A	1.500	)= .367	.500	8
53	.42	.09 =(	4.66	4A	41B	1.867	)= .033	1.408	15
53	.54	.01 =(	4.57	32A	1B	1.900	)= .600	1.136	10
53	.70	.00 =(	4.56	1B	8A	2.500	)= .136	2.141	6
53	.58	.04 =(	4.56	2C	32A	2.636	)= .531	1.606	11
53	.64	.01 =(	4.52	3A	3A	3.167	)= .064	2.609	12
53	.55	.05 =(	4.51	29B	32B	3.231	)= .019	1.576	13
53	.71	.03 =(	4.46	2A	31A	3.250	)= .667	1.920	8
53	.50	.03 =(	4.43	27A	2A	3.917	)= .208	3.968	12
53	.65	.07 =(	4.40	2B	2C	4.125	)= .075	3.689	8

* D = difference between 2 goals' mean rating / ranking

Table 3B

Top Eleven Ranked Goals by the CRR and the SRK Procedures

COMPLETE RATING – RANKING PROCEDURE (CRK)					SUBSET RANKING PROCEDURE (SRK)				
N	SD	D*	$\bar{X}$	GOAL	GOAL	$\bar{X}$	D*	SD	N
53	14.32	5.14 =(	8.75	3B	3B	1.385	)= .115	.625	13
53	21.09	.77 =(	15.89	1B	4A	1.500	)= .367	.500	8
53	14.86	.23 =(	14.66	4A	41B	1.867	)= .033	1.408	15
53	16.67	1.15 =(	14.89	2C	1B	1.900	)= .600	1.136	10
53	20.43	3.11 =(	16.04	2A	8A	2.500	)= .136	2.141	6
53	21.72	.66 =(	19.15	3A	32A	2.636	)= .531	1.666	11
53	13.02	1.91 =(	19.81	41B	3A	3.167	)= .064	2.609	12
53	11.26	.24 =(	21.72	29B	32B	3.231	)= .019	1.576	13
53	22.27	1.04 =(	21.96	2b	31A	3.250	)= .667	1.920	8
53	15.11	1.25 =(	23.00	27A	2A	3.917	)= .208	3.968	12
53	16.56	3.05 =(	24.25	32A	2C	4.125	)= .075	3.689	8

* D = difference between 2 goals' mean rating / ranking

Table 3C

Top Eleven Ranked Goals by the CRT and the CRK Procedures

COMPLETE RATING PROCEDURE (CRT)					COMPLETE RATING – RANKING PROCEDURE (CRK)				
N	SD	D*	$\bar{X}$	GOAL	GOAL	$\bar{X}$	D*	SD	N
53	.32		4.85	41B	3B	8.75		14.32	53
		.02	=(				)= 5.14		
53	.40		4.83	3B	1B	13.89		21.09	53
		.17	=(				)= .77		
53	.42		4.66	4A	4A	14.66		14.86	53
		.09	=(				)= .23		
53	.54		4.57	32A	2C	14.89		16.67	53
		.01	=(				)= 1.15		
53	.70		4.56	1B	2A	16.04		20.43	53
		.00	=(				)= 3.11		
53	.58		4.56	2C	3A	19.15		21.72	53
		.04	=(				)= .66		
53	.64		4.52	3A	41B	19.81		13.02	53
		.01	=(				)= 1.91		
53	.55		4.51	29B	29B	21.72		11.26	53
		.05	=(				)= .24		
53	.71		4.46	2A	2B	21.96		22.27	53
		.03	=(				)= 1.04		
53	.50		4.43	27A	27A	23.00		15.11	53
		.03	=(				)= 1.25		
53	.65		4.40	2B	32A	24.25		16.56	53
		.07	=(				)= 3.05		

* D = difference between 2 goals' mean rating / ranking

reliability of any of the procedures was as low as r_{tt} = .91, given the magnitude of goal standard deviations and the standard error of measurement, there would be a 95% chance that almost every goal's true rank could actually lie within a range of 2 to 10 ranks from its obtained rank.

The degree of uncertainty within any obtained set of data is such that no matter which goal prioritizing procedure the administrator chooses to employ, he cannot with confidence make important differential decisions solely on the basis of one goal's having a slightly higher mean rating/ranking than another goal.

DISCUSSION

The data indicate that the subdeck ranking procedure yields results that are essentially equivalent to "complete procedure" results (this, even with the potentially biased nature of the samples, the bias working against any hypothesis of equivalence). The equivalence of SRK and "complete procedure" results is, however, just one of several factors that needs to be examined before any decision to recommend the SRK as an alternate or substitute can be made. Additional factors include (1) the extent to which "subdeck procedures" address problems associated with the use of "complete procedures"; and (2) potential benefits and problems of "subset procedures."

Problems reported (Hoepfner, 1971) by (some)principals during the national field testing of the section of the Needs Assessment KIT that had to do with identifying goal priorities with the Collective Viewpoints Approach included the following:

1. Too many goals
2. Finding teacher time
3. Not enough cards

4. Tallying time too consuming
5. Parent understanding of directions
6. Getting returns from parents
7. Lack of cooperation
8. Only one socioeconomic group represented
9. Too few subjects
10. Parent availability
11. Goals interpreted differently by different groups

It seems reasonable to speculate that employing a subdeck procedure will, at least in part, deal with problems 1 through 4, and possibly mitigate problem 5. Subset-type procedures, however, do not seem to have any potential for addressing problems 6 through 11.

In examining the possibility of using the SRK (or other subdeck procedures) as an alternate or substitute for complete procedures, it is important to consider that the field test report on this section of the KIT showed that:

1. "School principals felt that the system of rating goals was easy for themselves (89%), easy for teachers (93%), and to a lesser extent easy for the parents (70%)."[5]
2. "Ninety-five percent of respondents found that the instructions for the Collective Viewpoints Approach were understandable; 93 percent could follow the procedure; and 85 percent found the computations easy."[6]
3. "The general reaction of teachers to the process of goal rating, as reported by principals, was favorable (80 percent) or mixed (10 percent), with 10 percent of the principals making no comment about teacher reaction."[7]

4. "Parent attitudes, as reported by principals, were 70 percent favorable and 20 percent mixed; again 10 percent of the principals offered no report on parent attitudes."[8]
5. "The overall reaction of the respondents to Booklet II (goal ratings) was 75 percent favorable, 11 percent mixed, and 4 percent unfavorable; while 6 percent had no comment."[9]
6. "Eighty-two percent of the respondents would recommend the procedures in Booklet II (goal ratings) to other principals."[10]

Based on speculation, the most serious potential problem of the SRK or any other subdeck procedure, is that individual raters are likely to be dissatisfied about determining the priorities within a set of goals that is not likely to contain all, or perhaps any, of the goals they believe are most important.

CONCLUSION

The subset ranking procedure (SRK) yields results that are equivalent to those obtained with "complete" rating or ranking procedures. However, it seems inappropriate at this time to either recommend or reject the use of the SRK or any other subdeck procedure as an alternate or substitute for "complete" rating/ranking procedures until the potential problem of rater dissatisfaction can be investigated.

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Notes

1. The reader should be aware that r_s and T have different underlying scales and are therefore not directly comparable (Siegel, 1956, p. 220). r_s is derived from the formula for a Pearson Product-Moment Correlation; while T is derived from the formula for the binomial distribution. Hays (1963, p. 649) points out that while the Spearman Coefficient is meaningful, at least at an elementary level, only by analogy with the ordinary correlation coefficient, the interpretation of an obtained value of T is straight forward. If a pair of objects (e.g., goals) is drawn at random from among those ranked, the probability that these two objects show the same order in both rankings is (e.g., if T = .65) .65 more than the probability that they would show different order. In other words, from the evidence at hand, it is a considerably better bet that the two procedures will tend to order a randomly selected pair in the same way than in a different way.

2. The reader should remember that both the CRT and CRK results were based on the judgments of the same 53 principals. And, that the CRK results rest on the CRT results.

3. Standard Error of Measurement = $s_t\sqrt{1-r_{tt}}$ See Magnusson (1966, p. 79-80).

4. p = .95

5. Hoepfner, 1971, p. 33

6. op. cit., p. 35

7. op. cit., p. 35

8. op. cit., p. 35

9. op. cit., p. 36

10. op. cit., p. 36

APPENDIX: 106 Goals of Elementary Education

1A. Shyness-Boldness

1B. Neuroticism-Adjustment

1C. General Activity-Lethargy

2A. Dependence-Independence

2B. Hostility-Friendliness

2C. Socialization-Rebelliousness

3A. School Orientation

3B. Self-Esteem

4A. Need Achievement

4B. Interest Areas

5A. Appreciation of Arts and Crafts

5B. Involvement in Arts and Crafts

6A. Representational Skill in Arts and Crafts

6B. Expressive Skill in Arts and Crafts

7A. Arts and Crafts Comprehension

7B. Developmental Understanding of Arts and Crafts

8A. Classificatory Reasoning

8B. Relational-Implicational Reasoning

8C. Systematic Reasoning

8D. Spacial Reasoning

9A. Creative Flexibility

9B. Creative Fluency

10A. Span and Serial Memory

10B. Meaningful Memory

10C. Spacial Memory

11A. Reading Comprehension of a Foreign Language

11B. Oral Comprehension of a Foreign Language

11C. Speaking Fluency of a Foreign Language

11D. Writing Fluency in a Foreign Language

12A. Cultural Insight through a Foreign Language

12B. Interest in and Application of a Foreign Language

13A. Spelling

13B. Punctuation

13C. Capitalization

13C. Grammar and Usage

13E. Penmanship

13F. Written Expression

13G. Independent Application of Writing Skills

14A. Use of Data Sources as Reference Skills

14B. Summarizing Information for Reference

15A. Comprehension of Numbers and Sets in Mathematics

15B. Comprehension of Positional Notation in Mathematics

15C. Comprehension of Equations and Inequalities

15D. Comprehension of Number Principles

16A. Operations with Integers

16B. Operations with Fractions

16C. Operations with Decimals and Percents

17A. Mathematical Problem Solving

17B. Independent Application of Mathematical Skills

18A. Geometric Facility

18B. Geometric Vocabulary

19A. Measurement Reading and Making

19B. Statistics

20A. Music Appreciation

20B. Music Interest and Enjoyment

21A. Singing

21B. Musical Instrument Playing

21C. Dance (Rhythmic Response)

22A. Aural Identification of Music

22B. Music Knowledge

23A. Practicing Health and Safety Principles

23B. Understanding Health and Safety Principles

23C. Sex Education

24A. Muscle Control (Physical Education)

24B. Physical Development and Well-Being (Physical Education)

25A. Group Activity - Sportsmanship

25B. Interest and Independent Participation in Sports & Games

26A. Understanding Rules & Strategies of Sports & Games

26B. Knowledge of Physical Education Apparatus and Equipment

27A. Listening Reaction and Response to Reading

27B. Speaking

28A. Phonetic Recognition

28B. Structural Recognition

29A. Oral Reading

29B. Silent Reading Efficiency

30A. Recognition of Word Meanings

30B. Understanding Ideational Complexes

30C. Remembering Information Read

31A. Inference Making from Reading Selections

31B. Recognition of Literary Devices

31C. Critical Reading

32A. Attitude toward Reading

32B. Attitude and Behavior Modification from Reading

32C. Familiarity with Standard Children's Literature

33. Religious Knowledge

34. Religious Belief

35A. Observation and Description in Science

35B. Use of Numbers and Measures in Science

35C. Classification and Generalization in Science

35D. Hypothesis Formation in Science

35E. Operational Definitions in Science

35F. Experimentation in Science

35G. Formation of Generalized Conclusions in Science

36A. Knowledge of Scientific Facts and Terminology

36B. The Nature and Purpose of Science

37A. Science Interest and Appreciation

37B. Application of Scientific Methods to Life

38A. Knowledge of History

38B. Knowledge of Governments

39A. Knowledge of Physical Geography

39B. Knowledge of Socio-Economic Geography

40A. Cultural Knowledge

40B. Social Organization Knowledge

41A. Research Skills in Social Sciences

41B. Citizenship

41C. Interest in Social Studies

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